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(54) Title: PROPORTIONING, REGENERATIVE, ROTARY PUMP

(57) Abstract: A pump system for tangential flow or crossflow liquid filtration systems, such as reverse osmosis, nano, and micro filtration systems, that independently fixes the fraction of product water produced for each stage and recovers a fraction of the energy normally lost in rejected waste streams. The pump is of the rotary positive-displacement type and fixes the percent recovery of the overall system by establishing set ratios through the use of differing displacements of the various pump and motor stages, per unit of time, between the feed water inlet, product water outlet, and reject water outlet volume of each stage of the filtration system while using the same ratio setting components to recover the energy normally expelled along with the reject, or concentrate water. The pump system, while initially developed for use in water processing, can find equal or greater use in processing of fluid streams other than water and in processes other than filtration or reverse osmosis.



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